

8 Medical Disorders During Pregnancy

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Each year, approximately 4 million births occur in the United States, and more than 130 million births occur worldwide. A significant proportion of births are complicated by medical disorders. In the past, many medical disorders were contraindications to pregnancy. Advances in obstetrics, neonatology, obstetric anesthesiology, and medicine have increased the expectation that pregnancy will result in a positive outcome for both mother and fetus despite most of these conditions. A successful pregnancy requires important physiologic adaptations, such as a marked increase in cardiac output. Medical problems that interfere with the physiologic adaptations of pregnancy increase the risk for poor pregnancy outcome; conversely, in some instances, pregnancy may adversely impact an underlying medical disorder.

HYPERTENSION

(See also Chap. 298) In pregnancy, cardiac output increases by 40%, with most of the increase due to an increase in stroke volume. Heart rate increases by ~10 beats/min during the third trimester. In the second trimester, systemic vascular resistance decreases, and this decline is associated with a fall in blood pressure. During pregnancy, a blood pressure of 140/90 mmHg is considered to be abnormally elevated and is associated with an increase in perinatal morbidity and mortality. In all pregnant women, the measurement of blood pressure should be performed in the sitting position, because the lateral recumbent position may result in a blood pressure lower than that recorded in the sitting position. The diagnosis of hypertension requires the measurement of two elevated blood pressures at least 6 h apart. Hypertension during pregnancy is usually caused by preeclampsia, chronic hypertension, gestational hypertension, or renal disease.

PREECLAMPSIA

Approximately 5–7% of all pregnant women develop *preeclampsia*, the new onset of hypertension (blood pressure >140/90 mmHg) and proteinuria (either a 24 hour urinary protein >300 mg/24 h, or a protein-creatinine ratio ≥ 0.3) after 20 weeks of gestation. Although the precise pathophysiology of preeclampsia remains unknown, recent studies show excessive placental production of antagonists to both vascular epithelial growth factor (VEGF) and transforming growth factor β (TGF- β). These antagonists to VEGF and TGF- β disrupt endothelial and renal glomerular function resulting in edema, hypertension, and proteinuria. The renal histological feature of preeclampsia is glomerular endotheliosis. Glomerular endothelial cells are swollen and encroach on the vascular lumen. Preeclampsia is associated with abnormalities of cerebral circulatory autoregulation, which increase the risk of stroke at mildly and moderately elevated blood pressures. Risk factors for the development of preeclampsia include nulliparity, diabetes mellitus, a history of renal disease or chronic hypertension, a prior history of preeclampsia, extremes of maternal age (>35 years or <15 years), obesity, antiphospholipid antibody syndrome, and multiple gestation. Low-dose aspirin (81 mg daily, initiated at the end of the first trimester) may reduce the risk of preeclampsia in pregnant women at high risk of developing the disease.